



### Project Highlights

*The Environmental Management Science Program (EMSP) is funding basic research projects focused on solving the most difficult problems that threaten the closure plans of DOE sites. This fact sheet highlights just one.*

### Seismic-Reflection and Ground Penetrating Radar for Environmental Site Characterization

This project combines the use of seismic reflection and ground penetrating techniques to produce high-quality, shallow surface (2 to 8 meters) imaging related to waste sites. The high dynamic range and many channels typical of modern seismographs, along with advances in ground-penetrating radar technology, offer new opportunities to extract useful information from the subsurface. Both techniques are noninvasive and can be used in situ. Combined, they offer improved near-surface imaging with minimal environmental impact.

This project involves innovative use of seismic sources and close-spaced geophones. It explores complementary uses of geophysical techniques for near-surface characterization. There is an immediate application for retrieval of buried waste at DOE sites that have complex geology such as at the Idaho National Engineering and Environmental Laboratory and the Savannah River Site.

**Location:** University of Kansas

**Year of Award:** 1997

**Amount of Award:** \$630, 000

**Office of Environmental Management (EM)**

**Problem Areas:** Remedial Action (primary),  
Decontamination and Decommissioning

**Office of Science (SC) Scientific Category/Sub-Category:** Geophysics/Subsurface Imaging

**Research Value/Impact:** Progress to date toward achieving workable ultra-shallow seismic reflection imaging is largely attributable to an improved ability to measure the near-source wavefield. Data was collected using a single 100-Hz geophone group interval of 5 cm. Due to increased receiver coverage, the ability to delineate and improve the coherence of ultra-shallow reflections over other interfering phases was enhanced.

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**More Information on the Web:**

<http://www.em.doe.gov/science> or  
<http://www.id.doe.gov/emsystems/emsp>

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